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APR 22 1952

Vol. 102 Washington : 1952 No. 3307

# SCHIZOSTELLA, A NEW GENUS OF BRITTLE-STAR (GORGONOCEPHALIDAE)

By Austin H. Clark

Thanks to the enthusiastic interest of Count Pourtalès, Alexander Agassiz, Prof. René Koehler, Dr. H. L. Clark, Dr. Th. Mortensen, and others more extensive and intensive work has been done on the echinoderm fauna of the Caribbean area than of any other part of the tropical seas. Yet within the past few years a very considerable number of new and surprising forms have come to light. During recent dredging operations Frederick M. Bayer added another to this growing list of unexpected new types, a new genus of Gorgonocephalidae, which may be known as—

## SCHIZOSTELLA, new genus

*Diagnosis.*—A genus of Gorgonocephalidae, subfamily Astrochelinae, resembling *Asteroporpa* and *Astrocnida* but with seven rays, the arms bifurcate at about the middle, the double rows of hook-bearing granules with the bordering larger granules forming bands as broad as the distance between them, and reproducing by fission.

*Genotype.*—*Schizostella bifurcata*, new species.

*Notes.*—The subfamily Astrochelinae of the family Gorgonocephalidae, distinguished from the subfamily Gorgonocephalinae by the absence of interradial accessory plates, includes seven genera of which five, *Astrochele*, *Astrogomphus*, *Asteroporpa*, *Astrothorax*, and *Astrothrombus*, have undivided arms, while in two, *Astrocnida* and *Astroclon*, the arms branch at the tip. The genera *Astrogomphus*, *Asteroporpa*, and *Astrocnida* are represented in the Caribbean region, the two first also in the west Pacific.



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*Schizostella* seems to be most closely related to *Asteroporpa*, especially to the group of species including *lindneri* of the Caribbean, *australiensis* of Australia, and *hadracantha* of Japan in which the double bands of hook-bearing tubercles on the arms are bordered on each side by a regular row of contiguous enlarged granules, the quadruple bands composed of enlarged and hook-bearing granules are only slightly elevated above the general surface of the arms, and the hooks are small, usually without an accessory tooth. In spite of the forked arms it is less closely related to *Astrocnida*, and much less closely to *Astroclon*.

In several ophiurans in different families the young have six or sometimes seven arms and reproduce by fission, giving rise to adults with usually five arms. But *Schizostella* cannot be the young of any known West Indian species as it differs from all related species in details of its structure and ornamentation.

Although a number of species in several genera of the Trichasteridae are known to reproduce by fission when young, this is the first case to be reported in the Gorgonocephalidae.

### SCHIZOSTELLA BIFURCATA, new species

PLATE 40

*Description.*—The disk is 4 mm. in diameter and is composed of seven triangular segments elevated in the middle and with rounded outer angles which are separated from each other by rather deep grooves, becoming deeper outwardly and ending at a deep notch in the interradial border. The seven segments each contain two radial ribs, but appear as single units, seldom giving any indication of a double structure.

The disk is densely covered with hemispherical granules, the smaller brownish and the larger white, which are irregularly arranged except at the distal ends of the segments, where there are two regular rows of white tubercles separated by two rows of hook-bearing tubercles.

The seven arms are at the base very nearly as broad as the distal width of the disk segments. They are roughly twice as long as the diameter of the disk and bifurcate at about the middle, on or about the thirteenth brachial.

The ornamentation of the arms resembles that of the outer part of the disk segments. There are evenly spaced transverse rows of white hemispherical granules between which are double rows of hook-bearing granules alternating with, at the base of the arms, irregular double rows of larger, lower, polygonal granules which farther out become single irregular rows and disappear almost completely at the arm tips. The hooks are minute, very stout, thick-crescentic, without an accessory tooth, and become very prominent on the slender arm tips.

SCHIZOSTELLA BIFURCATA, NEW GENUS, NEW SPECIES.

The topmost figure (both sides) is the type, U.S.N.M. No. E. 7875; the four lower figures are two cotypes. × 3.

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The oral surface is studded with large white granules resembling those on the aboral surface, but widely scattered.

The second tentacle pore has a double arm spine. Farther out there seem to be three arm spines arising from the same base. Distally these become transformed into hooks.

The genital openings, two in each interradius, are very large.

The color is pinkish brown, the under surface and the large tubercles yellowish white.

*Type.*—U.S.N.M. No. E. 7875, from off Triumph Reef, Elliott Key, Fla.; 20–25 fathoms; collected by Frederick M. Bayer, November 28, 1949.

*Notes.*—Three additional specimens were collected at the same station. The type and two others were on *Swiftia exserta* (Ellis and Solander) and one was on *Filigorgia*, sp.

The type and the specimen from *Filigorgia* are symmetrical with seven rays each. The two others have two full-sized rays and two much smaller, evidently the result of fission.

For comparison with these specimens there are at hand four examples of the ophiocrenoid stage of one of the species of Gorgonocephalinae. These have five arms which divide once, in some cases with the rudiments of a second forking at the tips of the secondary arms, and the interradial areas of the disk are deeply concave. They were dredged at *Albatross* station 3729, off Omai Zaki Light, Japan, in 34 fathoms and were clinging to *Melitodes*, sp. (*?nodosa*). They resemble in general the specimens described by Matsumoto (Journ. Coll. Sci., Tokyo Imper. Univ., vol. 38, art. 2, pp. 68, 69, fig. 18, p. 69, March 31, 1917) from Sagami Bay in 300 fathoms.

With the four specimens from *Albatross* station 3729 were dredged two specimens of *Astrocladus dofleini* Döderlein (recorded by H. L. Clark, U. S. Nat. Mus. Bull. 75, p. 293, 1911, as *Astrophyton pardalis*) of which they are presumably the young.

Matsumoto said that his ophiocrenoids may be young either of *Astroboa* or *Astrochalcis*. They are from deeper water than the maximum recorded for any of the five species of *Astrocladus*, all of which occur in the sublittoral zone.

While studying the specimens of *Muricea* collected by the *Albatross* in the West Indies Mr. Bayer found a second species of *Schizostella* which may be known as

### SCHIZOSTELLA BAYERI, new species

*Description.*—Resembling *S. bifurcata* and, like it, with seven bifurcate arms; but the white granules on the disk, instead of being scattered, are contiguous and arranged in regular lines to form a conspicuous, white, close reticulation, while those on the arms are con-

tiguous instead of slightly separated, forming regular narrow transverse lines across the arms.

*Type.*—U.S.N.M. No. E. 7997, from *Albatross* station 2138, southeast of Jamaica (lat. 17°44′05″ N., long. 75°39′00″ W.); 23 fathoms; coral and broken shells; February 29, 1884.

*Notes.*—The type and two additional specimens (E. 7998) were found on *Muricea pendula* Verrill.

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